

In the Claims

1 – 16. (Cancelled)

17. (Currently Amended) A device to monitor penetration of a penetration instrument in ~~an anatomical~~ a bone structure having at least two zones of different impedances comprising:

a penetration instrument that forms a hole in the bone structure having the at least two zones of different impedances, the penetration instrument extending along a longitudinal axis;

at least two electrodes located on the penetration instrument, each of the at least two electrodes having a contact surface coinciding with the surface of the penetration instrument;

a source of current supplying the at least two electrodes; and

means for measuring impedance between the at least two electrodes, during penetration of the penetration instrument into the bone structure; and

means for signalling producing a signal when a variation in impedance is detected by the means for measuring impedance when the penetration instrument passes from a first of the zones having a first impedance to a second of the zones having a second impedance to inform in real time a practitioner of the position of the penetration instrument;

wherein the contact surfaces of the at least two electrodes are dimensioned to be constant as a function of a degree of penetration of the penetration instrument in the anatomical structure, that contact surfaces having a dimension along the longitudinal axis that is smaller than that of the hole formed into the bone structure so that after entry into the bone structure, the contact surfaces arranged within the bone structure are invariable during penetration of the penetration instrument.

18. (Previously Presented) The device according to claim 17, wherein two of the electrodes have the contact surfaces coinciding with the distal surface of the penetration instrument and the two electrodes are coaxially arranged and separated from each other by insulation.

19. (Currently Amended) The device according to claim 17, wherein two of the electrodes have the contact surfaces coinciding with the distal surface of the penetration instrument and the two electrodes are symmetrical with respect to ~~[[a]]~~ the longitudinal axis of the penetration instrument.

20. (Previously Presented) The device according to claim 31, wherein the at least one electrode has one annular contact surface.

21. (Previously Presented) The device according to claim 17, wherein one main of the electrodes has the contact surface coinciding with a distal surface of the penetration instrument and at least two secondary of the electrodes have the contact surfaces laterally coinciding to form longitudinally spaced annular contacts.

22. (Previously Presented) The device according to claim 17, wherein one first of the electrodes has the contact surface coinciding with the distal surface of the penetration instrument, one second of the electrodes has a contact surface coinciding with the lateral surface of the penetration instrument, the device further comprising a third electrode partially covering the lateral surface of the penetration instrument.

23. (Cancelled)

24. (Currently Amended) The device according to claim ~~[[23]]~~ 17, wherein the signal produced is a sound signal whose frequency and/or rhythm decrease as a function of impedance measured.

25. (Previously Presented) The device according to claim 24, wherein the frequency and/or rhythm decrease in a non-linear manner as a function of the impedance measured.

26. (Currently Amended) The device according to claim ~~[[23]]~~, 17 wherein the signal produced when the instrument leaves ~~[[a]]~~ the bone structure ~~as the anatomical structure~~ is an acute sound signal with a rapid rhythm.

27. (Currently Amended) The device according to claim ~~[[23]]~~ 17, wherein the signal produced when the instrument penetrates ~~[[a]] the bone structure as the anatomical structure~~ is a low-pitched sound signal with a slow rhythm.

28. (Previously Presented) The device according to claim 17, which is an autonomous device.

29. (Previously Presented) The device according to claim 17, further comprising a central channel for passage of an additional instrument.

30. (Previously Presented) The device according to claim 17, wherein at least one of the electrodes has the contact surface coinciding with the distal surface of the penetration instrument.

31. (Previously Presented) The device according to claim 17, wherein at least one of the electrodes has the contact surface coinciding with the lateral surface of the penetration instrument.

32. (New) A device to monitor penetration of a penetration instrument in an anatomical structure having at least two zones of different impedances comprising:

a penetration instrument that forms a hole in the anatomical structure having the at least two zones of different impedances, the penetration instrument extending along a longitudinal axis;

at least two electrodes located on the penetration instrument, each of the at least two electrodes having a contact surface coinciding with a surface of the penetration instrument;

a source of current supplying the at least two electrodes;

an impedance measuring device that measures impedance between the at least two electrodes during penetration of the penetration instrument into the anatomical structure; and

a signalling device that produces a signal when a variation in impedance is detected by the impedance measuring device when the penetration instrument passes from a first of the zones having

a first impedance to a second of the zones having a second impedance to inform in real time a practitioner of the position of the penetration instrument;

wherein contact surfaces of the at least two electrodes are dimensioned to be constant as a function of a degree of penetration of the penetration instrument in the anatomical structure, the contact surfaces having a dimension along the longitudinal axis that is smaller than that of the hole formed into the anatomical structure so that after entry into the anatomical structure, the contact surfaces arranged within the bone structure are invariable during penetration of the penetration instrument.